Optimization Notes

Steps:

1. What is the smallest perimeter possible for a rectangle whose area is 16 in2 and what are its dimensions?
2. A farmer wishes to fence a field bordering a straight river with 1000 yards of fencing material. If no fence is needed near the river, what is the largest rectangular area that can be fenced that way?
3. A manufacturer wants to design an open box having a square base and a surface area of 108 sq inches. What dimensions will produce a box with a maximum value?
4. A 216 m2 rectangular pea patch is to be enclosed by a fence and dived into two equal parts by another fence parallel to one of the sides. How much fence will be needed to minimize the amount of fence?
5. A rectangular storage container with a closed top is to have a volume of 10 m3. The width is twice the length. Materials for the base and top costs $8 per sq. meter and the material for the sides cost $4 per sq meter. Find the dimensions to make the cheapest container.